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(54) **Method and device for packing a product, such as one or more slices of a cheese or meat product, in film material**

Verfahren und Vorrichtung zum Verpacken eines Produktes, wie eine oder mehrere Scheiben eines Käse- oder Fleischproduktes, in Folienmaterial

Procédé et dispositif pour emballer un produit, tel qu' une ou plusieurs tranches d'un produit de fromage ou de viande, dans un matériau en film

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Description

[0001] The present invention relates, on the one hand, to a method and, on the other hand, to a device for packing a product, such as one or more slices of a cheese or meat product, cake, biscuit, a filled bread roll, etc. in film.

[0002] Devices of this kind are known.

[0003] NL-1,012,956 discloses a device in which two film rolls are employed. The one film roll provides the film part on the bottom side of the packaging and the other roll the film part on the top side thereof. Close to a front edge of the strips emanating from the two film rolls, these strips are clamped together, the material to be packed is placed on the lowermost strip and then the whole is pulled beneath a sealing station by gripping of the front edges, lying one upon the other, of the two strips, after which two pressure members, a lowermost and an uppermost with the whole to be packed therebetween, are pressed one against the other and, under the influence of heat, a fusion weld is placed round about the product to be packed, which fusion weld joins together the lowermost and uppermost film parts.

[0004] Systems are also known (see, for example, US 3,016,673) in which a film strip is drawn off from a roll over a length of at least twice that of the packaging, which drawn-off portion is divided into two zones, into a downstream zone situated close to the end edge and an adjoining upstream zone, the material to be packed being deposited on the upstream zone, after which the downstream zone is folded over the upstream zone so as then, through seals round about the product to be packed, to obtain a closed packaging. This creates a positionally fixed fold between the lowermost and uppermost film parts, which fold is located at the transition between the downstream and upstream zones. Round about this fold, the two parts are laid one over the other.

[0005] Systems also exist in which it is not so much a roll which is employed, but loose sheets. In this connection, reference is made to NL 1,006,324, for example, as well as to the substantially earlier publication DE 29,500,342, bearing a very strong resemblance thereto, both originating from the same applicant. Both publications involve a depositing zone, in which meat products originating from a cutting machine are deposited on a previously deposited film sheet, after which the product to be packed is covered by a further film sheet and the whole, in a sealing device round about, is tightly sealed by mutually welding through the film sheets with a weld joint.

[0006] A device according to the preamble of claim 8 is disclosed in FR-A-2.129.115. This publication discloses a packaging device for bakery products. The device comprises a sealing station having two U-shaped sealing jaws for sealing two film strip parts lying one upon the other with the product in between. The film strip originates from a roll. The leading edge of the film strip is gripped by gripping means to form a cavity in between

the two film strip parts by folding back an end part of the film strip. The device further comprises cutting means for detaching the sealed package. The packaging procedure is that first the cavity between two film strip parts is formed, subsequently the product is placed into the cavity, and next the sealing and cutting operations are performed.

[0007] The aforementioned constructions all have the drawback that they contain a relatively large number of moving parts, including moving arms and gripping members. This makes these constructions technically relatively complex, relatively maintenance-prone and susceptible to wear. Furthermore, these moving parts demand the additional space which is necessary. For example, when a final film strip is folded double by folding over, this calls for the necessary swinging space for the folding over. The use of pre-cut sheets of film material, which are subsequently joined together by welding, means that the dimensions of the sheets dictate the dimensions given to the packaging and, to change the dimensioning of the packaging, the sheet dimensions have to be altered. This generally requires the device to be reset and components to be replaced, in so far as the sealing station allows this at all.

[0008] The object of the present invention is to provide an improved method and to provide an improved device for packing a product, such as one or more slices of a cheese or meat product, cake, biscuit, a filled bread roll, etc. in film material. A particular object of the present invention is to provide a device and a method by which packagings of variable dimensions can be easily produced. A further object of the invention is to provide a method which can be realized with a constructionally simple device, as well as to provide a constructionally simple device.

[0009] The aforementioned object is achieved by the provision of a method according to Claim 1, as well as the provision of a device according to Claim 8.

[0010] By gripping the leading edge of the film strip and bringing it to or holding it at a certain height above the support surface (for example, if this height were already present) and, material to be packed having been placed on the film strip located on the support surface, by drawing the product to be packed, complete with film strip et al, through beneath the gripped leading edge, this has the simple effect that the product to be packed comes to be enclosed between two layers of film and is then confined in between there following treatment in the sealing station. There is relatively little space required for moving parts. The drawing-through beneath the gripped leading edge can be realized, for example, with a moving pulling member, by, at the height of the gripped leading edge and from both sides of the film strip, sticking two pin-like members above the film strip and pulling these pin-like members together in the downstream direction through beneath the leading edge, whereupon two film strips, lying one over the other, are then formed, with a fold at the site of these pins,

which fold will travel along the film strip as the pins move forwards. The space required for such moving pins is scarcely more than the space required for the actual packaging. By making one or more of these pins of hollow construction, they can, moreover, also be used to wrap the packed product in a vacuum or gas. The packaging is then closed in the sealing station, whilst the hollow pin(s) remain(s) inserted in the packaging so as then to close off the passage(s) for these pins following the vacuum-wrapping or gas-wrapping. With the method and device according to the invention, it is also very easy to adapt the dimensions of the packaging to the dimensions of the product to be packed. The film strip simply has to be fed a greater or lesser distance through beneath the gripped leading edge. Also added to this is the fact that, viewed in the longitudinal direction of the film strip, the dimensioning of the packaging, including in terms of the sealing station, is variable without any changing of components or alteration of the setting. For, in the downstream direction the sealing of the packaging is determined by the fold and in the upstream direction by the connecting part between the U-shaped hold-down members. An additional advantage is also the position-correction of the product to be packed, when this product to be packed is placed on a tray to be jointly packed between the film or possibly on a special underlay sheet made of, for example, absorbent material or ordinary film material. If this tray or that underlay sheet is, namely, crookedly positioned and ends up at an angle to the fold travelling along the film strip as the film is fed through beneath the gripped leading edge, this fold will straighten the tray or the underlay sheet in the sense that the latter comes to bear with a longitudinal side against the fold. In the event, also, of slices of sausage or cheese, for example, being placed directly onto the film strip and not being accurately positioned, the effect is that the packaging can nevertheless remain within predefined dimensions, since such slices, if they will not, through sticking, slide over the film strip, are then folded over by the actual advancing fold. Though the packed product which is thereby obtained, depending on the requirements which might be placed upon it, might look somewhat less attractive when a slice has been folded over, the device according to the invention or a device in which the method according to the invention is applied will suffer no breakdowns in working resulting from incorrect positioning of the deposited slices.

[0011] According to the device according to Claim 9, use is not so much made of pins which pull the film through beneath the gripped leading edge as of continuous conveyor means on which the strip of film material lies and on which the film strip, under the influence of the product to be packed, has sufficient grip to be reliably fed through beneath the gripped leading edge.

[0012] In order that a packed product is separate or is separated from the film strip, it is preferable according to the invention if the method further provides a step in which the lowermost film strip part is cut through along

the leading edge of the uppermost film strip part or if, in the device according to the invention, cutting means are provided. The terms cutting-through and cutting means should here be interpreted in a broad sense. The use of knives or knife-like members can herein be envisaged, but also the application of laser or some other kind of heat source in order to obtain a through-cut.

[0013] In the method according to the invention, as well as a device in which this method is applied, it is of further advantage if, at the same time as the film material is fed through beneath the gripped front edge, a feed operation is conducted for the following packing cycle and if, around the moment of the cutting operation, the leading edge of the film strip for the following packing cycle is gripped. It should herein be noted that it is conceivable for this "leading edge" already to be gripped before the previous packaging has been separated from the film strip, in which case it is not, strictly speaking, a matter of gripping a leading edge, which, after all, will only be formed once the previous packaging has been separated from the film strip. It will certainly be clear to the person skilled in the art to what is here to be understood by "leading edge".

[0014] The method according to the invention and the device in which the method according to the invention is applied especially lend themselves to the cyclical packing of a large number of packagings.

[0015] As indicated earlier, it is preferable according to the invention if, for feeding film material through beneath the gripped leading edge of the film material, use is made of a continuous conveyor which, for this purpose, is actuated at appropriate moments. It is also preferable according to the invention if, also on the downstream side of the gripping means or, at least, of the gripped leading edge, a second continuous conveyor is provided, which, for the purpose of transporting away an obtained packaging, can be driven separately from the first conveyor.

[0016] It is especially preferable according to the invention if, during the so-called step e), the film material, by the product to be packed lying thereon, is pressed onto the first and/or second continuous conveyor in such a way that the first and second continuous conveyor effect step e) on their own. By "effect on their own" is meant, in particular, that that portion of the film strip which lies on the first and/or second continuous conveyor does not continue to be gripped by rollers or other gripping members in order to advance the transport but is simply fed through by the underlying conveyors. With a view to the unrolling of a roll of film material, it will be clear that immediately preceding the first continuous conveyor two driven transport rollers (at least one or both will be driven), the one pressing against the other, are arranged so as to unwind the roll of film material by pulling and to feed film material to the first continuous conveyor. Although this will also, of course, produce an upward thrust, the grip of the film strip, with packaging resting thereon, and the transporting action of the first

and possibly second continuous conveyor are sufficient to prevent, in any event, creases in the film strip and displacements of the film strip. All this will imply that the transport speed of the first continuous conveyor and second continuous conveyor will be tuned to the unrolling speed at which the other unrolling instruments unroll the film strip. These speeds will preferably be mutually identical or possibly the transport speed of the first and second conveyor will be able to be greater than the unrolling speed of the roll (in this case involving slippage between film strip and conveyors).

[0017] As regards the so-called feed-through height at which the gripped leading edge lies or, at least, is held above the support surface, it should be noted that this, to enable the packaging to be fed through beneath it, should be at least equal to the pack height plus twice the thickness of the film strip. Since the thickness of the film strip in this connection is negligible and jamming has to be prevented, it will already be sufficient in practice if the feed-through height is approximately $1.5 \times$ the pack height or greater, for example measures $2 \times$ the pack height.

[0018] Preferably, the device according to the invention is constructed for the purpose of being able to make the device operate fully automatically, this by means of suitable control means which, on the one hand, are actively connected to the operable components of the device according to the invention and, on the other hand, are set up to give, in the desired sequence, relevant control signals to these components. In this case, for example when the product to be packed is placed on the film wholly or partially by hand, the choice may be made to provide the device with an on-button which can be pressed by an operator to carry out a respective packing cycle. However, it is also readily conceivable for the initiation of a packing cycle also itself to be automated. This will be particularly applicable where the method and/or device according to the invention is applied in conjunction with a fully automatic or non-fully automatic cutting device for providing slices of the product to be packed or in conjunction with a feed device for advancing the product to be packed, such as one or more slices of a cheese or meat product, cake, biscuit, a filled bread roll, hamburgers, etc.

[0019] As regards the sealing station, it should be noted that use can here be made of many sealing techniques known from the prior art, including fusion-welding, impulse welding (a special embodiment of the so-called fusion welding, in which the hold-down members do not need to be permanently preheated), as well as of other sealing techniques. It is conceivable, for example, for the film strip, if pressed sufficiently firmly together, to effect a mutual seal by itself, for example through bonding agents or adhesives, or possibly mechanical interlocking means, provided for this purpose.

[0020] The present invention will be explained in greater detail below with reference to an illustrative embodiment represented diagrammatically in the drawing,

in which:

Figures 1 to 6 show, in a very diagrammatic side view, a number of phases in the method according to the invention, as well as, in correspondingly very diagrammatic representation, a device according to the invention in a number of different phases; Figure 2 shows a top view belonging to Figure 1; Figures 7 and 8 show a likewise very diagrammatic and perspective view of a device according to the invention in two different phases of the method according to the invention, the phases shown in Figures 6 and 7 conforming to the phases shown in Figures 1 and 4 respectively.

[0021] In the figures, a very diagrammatic representation is given of a device according to the invention, with which the method according to the invention can be applied. A device according to the invention is denoted by 1 in the figures. This device comprises a roll station 2 containing a roll 3 of film material, in particular transparent, printed or non-printed, coloured or non-coloured film material, which, for unrolling, is supported on two rollers 4 which, for the purpose of the unrolling, can be driven or can rotate freely. The film material might also possibly be non-transparent. From the roll 3, as it is unrolled, a strip 5 of film material is released, which, via a system of rollers 6 and 7 pressing one upon the other, of which at least one roller is drivable, is fed to a first conveyor 8 so as to lie on the top part thereof. The first conveyor 8 extends between two end reversing rollers 6 and 11, the first of which, as already indicated, interacts with roller 7 in order to clamp the film strip 5 therebetween and, when the roller 6 or 7 is driven, to be able to unwind the said film strip from the roll 3. On the downstream side (the edge of roller 11) of the first conveyor 8, gripping means 17 are provided for gripping the leading edge 50 of the film strip 5. In the illustrative embodiment, these gripping means 17 lie permanently at an elevation height H above the top part of the first conveyor 8.

[0022] In the extension of the first conveyor 8 there is a second conveyor 10, which extends between an upstream reversing roller 12 and a downstream reversing roller 13. In the shown illustrative embodiment, this second conveyor is movable to and fro, according to the arrow V, between a lowermost position shown in Figure 1 and an uppermost position shown in Figure 5. Although Figure 1 appears to suggest that the top parts of the first 8 and second 10 conveyor are at a selfsame height, it should be noted that the top parts of the second conveyor 10 can also lie lower, in particular can be set lower, than the top part of the first conveyor 8. This is particularly of interest in respect of relatively taller products, such as bread rolls, in order to procure sufficient space to lay the film thereover.

[0023] The first conveyor 8 can be constructed as a conveyor or, if so desired, as a belt conveyor having

belts placed at distances apart. With reference to Figure 2, it can be seen that in the shown illustrative embodiment the first conveyor 8 is constructed as a band conveyor. This could, however, very well be a belt conveyor, as is the case with the second conveyor 10 according to this illustrative embodiment.

[0024] In the top view according to Figure 2, the unit 23, which is yet to be discussed and is represented in Figures 1 and 2-6, as well as the gripping means 17, are not represented.

[0025] In Figure 2 it can be seen that in the surface of the top part of the second conveyor 10 a U-shaped, lowermost pressure member 14 is fitted. This U-frame 14 is the lowermost pressure member of a sealing device. Running between the parallel legs of the U-frame there are one (one is depicted in the shown example) or more belts 16, likewise also on the outside thereof. The belts 16 together tension the top surface of the second conveyor 10. It should be noted that the U-frames, close to the free ends of the legs, can also be closed by a respective closing part in order to obtain a rectangular U-frame and, upon the final packing, also by a rectangular stop seal round about the product. The closing parts can possibly be adjustable along the legs of the U-frames. The sides of the U-frames and the possible closing part will also, preferably, each be able to be switched individually on and off whenever this is required by a follow-on process.

[0026] Located above the second conveyor 10 is the uppermost pressure member (not represented), which in shape and dimensions conforms to the lowermost pressure member 14 such that these members can lie precisely one upon the other so as mutually to seal two intervening film strips lying one upon the other. This uppermost pressure member is accommodated in the unit 23. The lowermost pressure member 14 and uppermost pressure member can be of a so-called heat seal type, possibly of the pulse seal type very well suited to meat products, specifically. In the unit 23 there is also provided a pad 18, situated between and above the parallel legs of the uppermost pressure member.

[0027] With reference to Figures 1 to 6, the method according to the invention can be described as follows:

[0028] From the roll 3, a strip 5 of film material is fed along a support surface 53, formed by the top part of the first conveyor 8, for receiving the product to be packed. In the figures, this product to be packed is denoted by 9 and 51. 51 is a dish, a so-called tray, in which a meat or cheese product 9 is placed. In the case of a meat or cheese product 9, this will especially originate from a slicing machine, such as is known extensively in the prior art and in widely differing types, or will be deposited manually. Close to the downstream end of the support surface 53, the leading edge 50 of the strip of film material 5 is gripped by gripping means 17. The tray 51, containing the meat or cheese product 9, stands on that portion of the film strip 5 lying over the support surface 53. And the height of this product 51, 9 to be packed is

less than the height H at which the gripping means 17 hold the leading edge 50 above the support surface 53.

[0029] As will be clear, the leading edge 50 will preferably be gripped first, before the product to be packed 9, 51 is deposited on the film strip. It might also be conceivable first to deposit the product to be packed 9, 51 on the film strip and only then to grip the leading edge 50.

[0030] In so far as the leading edge 50 is not already at the so-called feed-through height H above the support surface 53 - in the present example this will be the case, since the unit 23 and the support surface 53 are at a mutually fixed, possibly adjustable height difference H - the leading edge 50 will yet be brought to this feed-through height H before the film strip 5 and the product to be packed 51, 9 lying thereon are fed through beneath the gripped leading edge 50.

[0031] The first conveyor 8 and, preferably, also the second conveyor 10 will be actuated for transportation in the downstream direction (from left to right in the figures). The product to be packed 51, 9, placed on the film strip, will hereupon keep the film strip 5 pressed on the first and second conveyors 8, 10. An intermediate phase of feeding the packed product placed on the film strip through beneath the gripped leading edge 50 is shown in Figure 3. A following phase, in which the product to be packed 9, 51 has been fed fully through beneath the gripped leading edge 51, is shown in Figure 4. As revealed by Figures 3 and 4, as this feeding-through is realized beneath the gripped leading edge 50, a fold, or at least a curve 20, is formed in the film strip, the position of which fold or curve, during the feed-through, continues to travel along/over the film strip. That portion of the film strip 5 located above the second conveyor 10 is divided, for closer indication, into a lowermost film strip part 22 and an uppermost film strip part 21, mutually separated by the fold/curve 20. As can especially be seen in Figure 4, but is already suggested by Figure 3, the downstream side of the product to be packed, as it is fed through beneath the leading edge 50, comes into contact with the fold/curve 20 (at least, assuming that the product to be packed 9, 51 in Figure 1 is placed sufficiently close to the leading edge 50) and this fold/curve 20 will then be able to have a position-correcting effect upon the product to be packed, inasmuch as this fold/curve 20 can push the product to be packed to the right or even somewhat back (upstream).

[0032] In a following step, represented in Figure 5, the lowermost film strip part 22 and the uppermost film strip part 21 are mutually sealed. In the example shown, this is done by moving the second conveyor 10 upwards, so that the product to be packed 9, 51 comes up against the pad 18, which will then press down the uppermost film strip part 21. The lowermost pressure member 14, and the uppermost pressure member accommodated in the unit 23, will thereupon press the lowermost 22 and uppermost 21 film strip together and, under the influence of heat, fuse them together to form a U-shaped seal which connects to the fold 20 and thus, together

with the fold 20, forms an all-round closed seal. As will readily be clear to the person skilled in the art, it is also possible, instead of moving the second conveyor 10 upwards, to move the unit 23 downwards towards the second conveyor 10. It is also conceivable to move the second conveyor 10 and the unit 23 closer together by moving them both.

[0033] Before, during or after the mutual sealing of the lowermost and uppermost film strip 22, 21, the film strip 5, during the phase shown in Figure 5, will be cut through by cutting means provided close to the gripping means 17, these cutting means (not shown) interacting with the gripping means 17 in such a way that the gripping means 17, as can be seen in Figure 6, will secure the new leading edge 50 acquired after the cutting.

[0034] After the steps described with reference to Figure 5, the lowermost and uppermost pressure member will be moved apart again, in the present example the second conveyor 10 will be moved back downwards until this precisely connects to the first conveyor 8. The second conveyor 10 can then subsequently be driven separately from the first conveyor 8 in order to transport away the acquired packaging 30, as represented in Figure 6, whilst a following product to be packed is deposited on the first conveyor 8, as indicated in Figure 6 by the vertical arrow.

[0035] Figures 7 and 8 show in a less diagrammatic form and in perspective view the previously described device according to the invention in the phases of Figures 1 and 4 respectively. The previously described components are in this case all accommodated in and on a housing 40. Figure 7 also indicates with dashed lines that on that housing 40 a further unit 41 can be placed, which, as likewise indicated diagrammatically by dashed lines, can lay out trays 50 on the support surface 53 by means of arms 43 and rams 42. A minor difference of detail is that, additionally in Figures 7 and 8, the hold-down roller 7 is represented on the bottom side of the first conveyor instead of on the top side of the first conveyor 8.

[0036] It should further be noted that many variants to the method and device, falling within the scope of the claims of the present application, might be conceived. Thus it is conceivable, for example, prior to the mutual sealing of the lowermost and uppermost film strip part, to stick a needle between these film strip parts so as, once the seal has been obtained, to be able to create further vacuum by suction or possibly add a shelf-life-enhancing gas, to subsequently extract this needle and, of course, seal the passage of the needle. It is also conceivable, even advantageous, to provide an adjustment facility in order to be able to adapt the quantity of film to be fed through beneath the gripped leading edge to the dimensions of the product to be packed. This can be realized, for example, by arranging the control means in such a way that they respectively lead the first and second conveyor onwards over a set, that is to say given, distance.

Claims

1. Method for packing a product (9, 51), such as one or more slices of a cheese or meat product, in film material, comprising the following steps:
 - a) the feeding of a strip (5) of film material along a support surface (53) for receiving the production (9, 51) to be packed on this strip (5) of film material;
 - b) the gripping of the film material (5), close to the downstream end (11) of the support surface (53), by a leading edge (50) of the film strip (5);
 - c) the holding or bringing of the gripped leading edge (50) at/to a feed-through height (H) above the support surface, viewed at right angles to the downstream end of the support surface;
 - d) the depositing of the product (9, 51) to be packed on that portion of the film strip (5) which is located on the support surface (53);
 - e) the feeding-through of film material, with the product to be packed lying thereon, in such a way beneath the gripped leading edge (50) of the film strip (5), whilst the leading edge (50), viewed in the longitudinal direction of the support surface, remains in its place, that downstream of the leading edge (50) two film strip parts, joined together by a fold (20) and lying one upon the other, are formed, with the joined together by a fold and lying one upon the other, are formed, with the product (9, 51) to be packed therebetween;
 - f) the procurement around the product of a U-shaped mutual sealing of the film strip parts, which seal, close to the open ends of the U-shape, connects to the fold.
2. Method according to Claim 1, comprising a step g) in which the lowermost film strip part (22) is cut through along the leading edge (50) of the uppermost film strip part (21).
3. Method according to Claim 2, wherein, simultaneously with step e), the step a) of a following packing cycle takes place and wherein, before, simultaneously with or directly after step g), step b) of this following packing cycle takes place.
4. Method according to one of the preceding claims, wherein steps a)-f) are repeated several times.
5. Method according to one of the preceding claims, wherein running over the support surface (53) is the top part a first continuous (8) or and wherein this continuous conveyor is actuated in steps a) and e).
6. Method according to Claim 5, wherein the first continuous conveyor (8) ends close to the downstream

end of the support surface (53) and a second continuous conveyor (10) connects to the first continuous conveyor (8), both continuous conveyors being actuated in steps a) and e), and wherein, in a step h), the second continuous conveyor (10), after step g), is actuated in order to transport away the packed product (9, 51) whilst the first conveyor (8) remains idle, and wherein, preferably, during step h), a step d) is already performed for a following cycle.

7. Method according to Claim 5, wherein, during step e), the film material, by the product (9, 51) to be packed lying thereon, is pressed onto the first (8) and/or second (10) conveyor in such a way that the first (8) and second (10) continuous conveyor respectively effect step e) on their own.

8. Device for packing a product (9,51), such as one or more slices of a cheese or meat product, in film material to form a pack having a predefined maximum pack height, comprising a basic frame having:

- * a sealing station comprising an at least U-shaped, possibly rectangular, lowermost pressure member (14) and an at least U-shaped, possibly rectangular, uppermost pressure member, which pressure members can be moved closer together in order to press together two intervening film strip parts (21,22) lying one upon the other and can be moved further apart in order to release a packaging located between them;
- * cutting means for detaching the packaging from the film strip (5);
- * a roll station (2) for a roll (3) of film material; and
- * gripping means (17) for gripping the leading edge (50) of the strip (5),

in which the U-shaped upper (14) and lower pressure members are facing, with their open side, away from the gripping means (17); and

in which the gripping means (17) are provided at, or at least can be brought to, a position to define a feed-through height (H); **characterised**

in that the basic frame further has:

- * continuous conveyor means (8, 10) for transporting a strip (5) of film material, comprising, or at least spanning, a support surface (53) for receiving a product (9, 51) to be packed on a portion of this strip lying on that support surface (53); and
- * guide means (6,7) for guiding the strip of film material from the roll station (2) onto the continuous conveyor means (8, 10);

in that the gripping means are provided at the downstream end (11) of the support surface (53) in

a fixed position, viewed in the longitudinal direction of the conveyor means (8, 10), relative to these conveyor means, and

in that the feed-through height is defined, viewed at right angles to the downstream end of the support surface (53), as an height (H) above the support surface (53), which feed-through height (H) is greater than the pack height, for example is 1.5 times this pack height or is even greater; and

in that the lower most (14) and uppermost pressure members are located on that side of the gripping means (17) facing away from the support surface (53).

9. Device according to Claim 8, comprising control means which, on the one hand, are actively connected to the continuous conveyor means (8, 10), the gripping means (17), the sealing station (14), and the cutting means, as well as, preferably, the guide means, and, on the other hand, are set up to grip the leading edge (50) of the film strip (5) and hold this at feed-through height (H) above the support surface (53) in order to direct the conveyor means (8, 10) and, preferably, the guide means to feed the film strip (5) through beneath the leading edge (50) in such a way that downstream of the leading edge (50) two film strip parts (21, 22), joined together by a fold (20) and lying one upon the other, are formed, so as to press the pressure members (14), with the film strip parts (21, 22) therebetween, one against the other to provide a U-shaped seal which, with the open side of the U-shape, connects to the fold (20) so as to move the pressure members apart, after having been pressed together, and cause the cutting means to detach the packaging from the film strip (5).

10. Device according to Claim 8 or 9, wherein the continuous conveyor means (8, 10) comprise a first continuous conveyor (8) running upstream of the gripping means (17) and a second continuous conveyor (10) running downstream of the gripping means (17).

11. Device according to Claim 10, wherein the control means are set up so as, after the packaging has been sealed tight and cut loose, to drive the second conveyor (10) separately from the first conveyor (8) in order to transport away the packaging in a direction away from the gripping means (17).

12. Device according to Claim 10 or 11, wherein the second conveyor (10) comprises three mutually parallel conveyor sections (16) with, lying therebetween, the legs of the lowermost hold-down member (14), and wherein the web of the lowermost hold-down member runs upstream of these three sections (16).

13. Device according to one of Claims 10-12, wherein the second conveyor (10) can be moved up and down, at right angles to the transport surface thereof, from a position situated in the extension of the first conveyor (8) into a position situated higher than the first conveyor (8). 5
14. Device according to one of Claims 10-13, wherein the first (8) and/or second conveyor (10) comprise band or belt conveyors having a rubber-like rubber material on the external surface of the band(s) and the belts placed at a mutual distance apart. 10
15. Device according to one of Claims 9-14, wherein the sealing station (14) is a fusion welding station of, preferably, the impulse welding type. 15

Patentansprüche

1. Verfahren zum Verpacken eines Produktes (9, 51) wie eine oder mehrere Scheiben eines Käse- oder Fleischproduktes in Filmmaterial mit nachfolgenden Verfahrensschritten:
- a) Zuführen eines Streifens (5) von Filmmaterial entlang einer Aufnahme­fläche (53) zur Aufnahme des zu verpackenden Produktes (9, 51) auf diesem Streifen (5) von Filmmaterial;
- b) dem Erfassen des Filmmaterials (5), nahe dem ablaufseitigen Ende (11) der Aufnahme­fläche (53), an einem vorlaufenden Ende (50) des Filmstreifens (5);
- c) das Halten oder Verbringen des ergriffenen vorlaufenden Endes (50) an/zu einer Zuführhöhe (H) oberhalb der Aufnahme­fläche, gesehen in rechten Winkeln zum ablaufseitigen Ende der Aufnahme­fläche;
- d) das Ablegen des zu verpackenden Produktes (9, 51) auf diesem Abschnitt des Filmstreifens (5), der auf der Aufnahme­fläche (53) angeordnet ist;
- e) dem Zuführen von Filmmaterial, auf welchem das zu verpackende Produkt liegt, unterhalb des ergriffenen vorlaufenden Endes (50) des Filmstreifens (5), während das vorlaufende Ende (50), in Längsrichtung der Aufnahme­fläche (53) gesehen, an seiner Stelle verbleibt, derart, dass am ablaufseitig des vorlaufenden Endes (50) zwei Filmstreifenteile gebildet werden, die miteinander über einen Falz (20) verbunden sind und übereinander liegen, wobei sich das zu verpackende Produkt (9, 51) dazwischen befindet;

f) dem Herstellen einer U-förmigen gegenseitigen Versiegelung der Filmstreifenteile um das Produkt, wobei die Versiegelung in der Nähe der offenen Enden der U-Form mit dem Falz verbunden ist.

2. Verfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** in einem Schritt g) das unterste Filmstreifenteil (22) entlang des vorlaufenden Endes (50) des obersten Filmstreifenteils (21) durchgeschnitten ist.
3. Verfahren gemäß Anspruch 2, **dadurch gekennzeichnet, dass** gleichzeitig mit Schritt e) der Schritt a) eines folgenden Verpackungszyklus' stattfindet und zuvor, gleichzeitig mit oder direkt nach Schritt g), Schritt b) dieses folgenden Verpackungszyklus' stattfindet.
4. Verfahren gemäß einem oder mehrerer der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Schritte a) bis f) mehrmals wiederholt werden. 20
5. Verfahren gemäß einem oder mehrerer der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die durchlaufene Aufnahme­fläche (53) das Oberteil einer ersten kontinuierlichen Fördereinrichtung (8) ist, wobei diese kontinuierliche Fördereinrichtung in den Schritten a) und e) betätigt wird. 25
6. Verfahren gemäß Anspruch 5, **dadurch gekennzeichnet, dass** die erste kontinuierliche Fördereinrichtung (8) nahe am ablaufseitigen Ende der Aufnahme­fläche (53) endet und eine zweite kontinuierliche Fördereinrichtung (10) sich an die erste kontinuierliche Fördereinrichtung (8) anschließt, wobei beide kontinuierlichen Fördereinrichtungen in den Schritten a) und e) betätigt werden und wobei in einem Schritt h) die zweite kontinuierliche Fördereinrichtung (10) nach Schritt g) betätigt wird, um die verpackten Produkte (9, 51) abzutransportieren, während die erste Fördereinrichtung (8) unbenutzt bleibt und wobei vorzugsweise während Schritt h) ein Schritt d) bereits für einen folgenden Zyklus durchgeführt wird. 30
7. Verfahren gemäß Anspruch 5, **dadurch gekennzeichnet, dass** während Schritt e) das Filmmaterial, auf welchem das zu verpackende Produkt (9, 51) aufliegt, auf die erste (8) und/oder die zweite (10) Fördereinrichtung derart gedrückt wird, dass die erste und die zweite kontinuierliche Fördereinrichtung (8, 10) Schritt e) selbsttätig ausführen. 35
8. Vorrichtung zum Verpacken eines Produktes (9, 51) wie Scheiben eines Käse- oder Fleischproduktes in Filmmaterial zur Herstellung einer Verpackung mit 40

einer vorbestimmten maximalen Packungshöhe, mit einem Basisrahmen, enthaltend:

- eine Versiegelungsstation mit einer zumindest U-förmigen, möglichst rechteckigen unteren Druckelement (14) und einem zumindest U-förmigen, möglichst rechteckigen oberen Druckelement, wobei die Druckelemente derart näher zueinander bewegbar sind, dass zwei dazwischen liegende Filmstreifenteile (21, 22), die übereinander liegen, zusammengepresst werden und voneinander wegbewegbar sind, um eine zwischen diesen angeordnete abgepackte Menge freizugeben;
- eine Schneideeinrichtung zum Ablösen der abgepackten Menge von dem Filmstreifen (5);
- eine Rollstation (2) für eine Rolle (3) von Filmmaterial; und
- Greifeinrichtungen (17) zum Ergreifen des vorlaufenden Endes (50) des Streifens (5), wobei das U-förmige obere (14) und das untere Presselement mit ihren offenen Seiten von den Greifeinrichtungen (17) weg weisen; und wobei die Greifeinrichtungen in einer Position angeordnet sind oder zumindest in eine Position gebracht werden können, in der sie eine Zuführhöhe (H) definieren,

dadurch gekennzeichnet, dass der Basisrahmen ferner aufweist:

- kontinuierliche Fördereinrichtungen (8, 10) zum Transport eines Streifens (5) von Filmmaterial, aufweisend oder zumindest aufspannend eine Aufnahmeoberfläche (53) zur Aufnahme eines zu verpackenden Produktes (9, 51) auf einem Abschnitt dieses Streifens, der auf dieser Aufnahmeoberfläche (53) liegt; und
- Führungsmittel (6, 7) zur Führung des Streifens von Filmmaterial von der Rollstation (2) zu den kontinuierlichen Fördereinrichtungen (8, 10)

dass die Greifeinrichtungen am ablaufseitigen Ende (11) der Aufnahmeoberfläche (53) in einer stationären Position vorgesehen sind, gesehen in Längsrichtung der Fördereinrichtungen (8, 10) in Bezug auf diese Fördereinrichtungen und **dass** die Zuführhöhe, gesehen in rechten Winkeln zum ablaufseitigen Ende der Aufnahmeoberfläche (53), als eine Höhe (H) definiert ist oberhalb der Aufnahmeoberfläche (53) und die Zuführhöhe (H) größer ist als die Packhöhe, z. B. 1,5 mal die Packhöhe oder sogar mehr beträgt und **dass** das untere und das obere Presselement auf

der Seite der Greifeinrichtungen (17) angeordnet sind, die von der Aufnahmeoberfläche (53) weg weist.

9. Vorrichtung gemäß Anspruch 8, **dadurch gekennzeichnet, dass** diese Steuermittel aufweist, die einerseits aktiv mit den kontinuierlichen Fördereinrichtungen (8, 10), Greifeinrichtungen (17), Versiegelungsstation (14) sowie den Schneideinrichtungen sowie vorzugsweise den Führungsmitteln verbunden sind und andererseits beschaffen sind, das vorlaufende Ende (50) des Filmstreifens (5) zu ergreifen und dieses in Zuführhöhe (H) oberhalb der Aufnahmeoberfläche (53) zu halten und um die Fördereinrichtungen (8, 10) zu steuern und vorzugsweise die Führungseinrichtungen zu steuern zur Zufuhr des Filmstreifens (5) unterhalb des vorlaufenden Endes (50), derart, dass ablaufseitig des vorlaufenden Endes (50) zwei Filmstreifenteile (21, 22) gebildet werden, die übereinander liegen und mit einem Falz (20) miteinander verbunden sind und die Druckelemente (14) mit den dazwischen liegenden Filmstreifenabschnitten (21, 22) zur Erzeugung einer U-förmigen Versiegelung gegeneinander gedrückt werden, wobei die offene Seite der U-Form derart mit dem Falz (20) verbunden ist, dass die Druckelemente auseinander bewegt werden, nach dem diese zusammengedrückt wurden und die Schneideinrichtungen zur Ablösung der abgepackten Menge vom Filmstreifen (5) angesteuert werden.

10. Vorrichtung gemäß Anspruch 8 oder 9, **dadurch gekennzeichnet, dass** die kontinuierlichen Fördereinrichtungen (8, 10) eine erste kontinuierliche Fördereinrichtung (8) aufweisen, welche einlaufseitig in Bezug auf die Greifeinrichtungen (17) läuft und eine zweite kontinuierliche Fördereinrichtung (10) aufweist, die ablaufseitig der Greifeinrichtungen (17) läuft.

11. Vorrichtung gemäß Anspruch 10, **dadurch gekennzeichnet, dass** die Steuereinrichtungen derart ausgebildet sind, dass nach der dichtenden Versiegelung der Verpackung und deren Abtrennen die zweite Fördereinrichtung (10) separat von der ersten Fördereinrichtung (8) antreibbar ist, um die Verpackung in eine Richtung weg von den Greifeinrichtungen (17) zu transportieren.

12. Vorrichtung gemäß Anspruch 10 oder 11, **dadurch gekennzeichnet, dass** die zweite Fördereinrichtung (10) drei in Bezug aufeinander parallele Fördersektionen (16) aufweist, zwischen denen die Beine des unteren Niederhalteelementes (14) verlaufen und die Bahn des unteren Niederhalteelementes einlaufseitig zu diesen drei Sektionen (16) verläuft.

13. Vorrichtung gemäß einer der Ansprüche 10 bis 12, **dadurch gekennzeichnet, dass** die zweite Fördereinrichtung (10) auf und ab bewegbar ist, in rechten Winkeln in Bezug auf die Aufnahme­fläche, von einer Position als Fortsetzung der ersten Fördereinrichtung (8) in eine Position oberhalb der ersten Fördereinrichtung (8).

14. Vorrichtung gemäß einer der Ansprüche 10 bis 13, **dadurch gekennzeichnet, dass** die erste (8) und/oder die zweite Fördereinrichtung (10) Bänder- oder Riemenförderer aufweisen, mit einem gummiartigen Gummimaterial auf der äußeren Oberfläche des Bandes oder der Bänder, wobei die Riemen in einem gegenseitigen Abstand platziert sind.

15. Vorrichtung gemäß einer der Ansprüche 9 bis 14, **dadurch gekennzeichnet, dass** die Versiegelungsstation (14) eine Schmelzschweißstation ist, bevorzugt vom Typ des Impulsschweißens.

Revendications

1. Procédé pour emballer un produit (9, 51) tel qu'une ou plusieurs tranches d'un produit de fromage ou de viande, dans un matériau en film, comportant les étapes suivantes :

a) l'alimentation d'une bande (5) de matériau en film le long d'une surface de support (53) destinée à recevoir le produit (9, 51) devant être emballé sur cette bande (5) de matériau en film ;

b) la saisie du matériau en film (5), à proximité de l'extrémité aval (11) de la surface de support (53), par un bord d'attaque (50) de la bande de film (5) ;

c) le maintien ou l'amenée du bord d'attaque saisi (50) à / vers une hauteur d'alimentation au-dessus de la surface de support, vue à angles droits par rapport à l'extrémité aval de la surface de support ;

d) le dépôt du produit (9, 51) devant être emballé sur la portion de la bande de film (5) qui est située sur la surface de support (53) ;

e) l'alimentation du matériau en film, avec le produit devant être emballé reposant dessus, de telle sorte sous le bord d'attaque saisi (50) de la bande de film (5), tandis que le bord d'attaque (50), vu dans la direction longitudinale de la surface de support (53), reste en place, qu'en aval du bord d'attaque (50) deux parties de bande de film, reliées ensemble par un pli (20) et reposant l'une sur l'autre, sont formées, avec le produit (9, 51) devant être emballé entre celles-ci ;

f) l'obtention autour du produit d'un scellement

mutuel en forme de U des parties de bande de film, lequel scellement, à proximité des extrémités ouvertes de la forme en U, est relié au pli.

2. Procédé selon la revendication 1, comprenant une étape g) dans laquelle la partie inférieure de la bande de film (22) est découpée au travers le long du bord d'attaque (50) de la partie supérieure de la bande de film (21).

3. Procédé selon la revendication 2, dans lequel, simultanément avec l'étape e), l'étape a) d'un cycle d'emballage suivant a lieu et dans lequel, avant, simultanément avec ou directement après l'étape g), l'étape b) de ce cycle d'emballage suivant a lieu.

4. Procédé selon l'une des revendications précédentes, dans lequel les étapes a) à f) sont répétées plusieurs fois.

5. Procédé selon l'une des revendications précédentes, dans lequel la partie supérieure d'un premier transporteur continu (8) se déplace sur la surface de support (53) et dans lequel ce transporteur continu est actionné aux étapes a) et e).

6. Procédé selon la revendication 5, dans lequel le premier transporteur continu (8) se termine à proximité de l'extrémité aval de la surface de support (53) et un second transporteur continu (10) est relié au premier transporteur continu (8), les deux transporteurs continus étant actionnés dans les étapes a) et e), et dans lequel, dans une étape h), le second transporteur continu (10), après l'étape g), est actionné afin d'emporter le produit emballé (9, 51) tandis que le premier transporteur (8) reste à l'arrêt, et dans lequel, de préférence, pendant l'étape h), on procède déjà à une étape d) pour un cycle suivant.

7. Procédé selon la revendication 5, dans lequel, pendant l'étape e), le matériau en film, par le produit (9, 51) devant être emballé qui repose dessus, est appuyé sur le premier (8) et / ou le second (10) transporteur de telle sorte que le premier (8) et le second (10) transporteurs continus réalisent respectivement l'étape e) par eux-mêmes.

8. Dispositif pour emballer un produit (9, 51), tel qu'une ou plusieurs tranches d'un produit de fromage ou de viande, dans un matériau en film pour former un emballage ayant une hauteur d'emballage maximale prédéfinie, comportant un bâti de base possédant :

* une station de scellement comportant un élément de pression inférieur (14), au moins en forme de U, éventuellement rectangulaire, et un élément de pression supérieur, au moins en

forme de U, éventuellement rectangulaire, lesquels éléments de pression peuvent être rapprochés ensemble afin de comprimer ensemble deux parties (21, 22) de bande de film intervenantes reposant l'une sur l'autre et peuvent ensuite être éloignés afin de libérer un emballage situé entre eux ;

- * des moyens de découpage pour détacher l'emballage de la bande de film (5) ;
- * une station de bobinage (2) pour une bobine (3) de matériau en film ; et
- * des moyens de saisie (17) pour saisir le bord d'attaque (50) de la bande (5),

dans lequel les éléments de pression supérieur (14) et inférieur en forme de U se font face, avec leur côté ouvert, à l'écart des moyens de saisie (17) ; et

dans lequel les moyens de saisie (17) sont fournis, ou au moins peuvent être amenés, à une position pour définir une hauteur d'alimentation (H) ; **caractérisé**

en ce que le châssis de base possède en outre :

- * des moyens de transport continu (8, 10) pour transporter une bande (5) d'un matériau en film, comprenant, ou au moins couvrant, une surface de support (53) destinée à recevoir un produit (9, 51) devant être emballé sur une portion de cette bande reposant sur cette surface de support (53) ; et
- * des moyens de guidage (6, 7) pour guider la bande de matériau en film de la station de bobinage (2) aux moyens de transport continu (8, 10) ;

en ce que les moyens de saisie sont fournis à l'extrémité aval (11) de la surface de support (53) dans une position fixée, vue dans la direction longitudinale des moyens de transport (8, 10), par rapport à ces moyens de transport, et

en ce que la hauteur d'alimentation est définie, vue à angles droits par rapport à l'extrémité aval de la surface de support (53), en tant qu'une hauteur (H) au-dessus de la surface de support (53), laquelle hauteur d'alimentation (H) est supérieure à la hauteur d'emballage, par exemple vaut 1,5 fois cette hauteur d'emballage ou est même supérieure ; et

en ce que les éléments de pression inférieur (14) et supérieur sont situés sur le côté des éléments de saisie (17) dirigé à l'opposé de la surface de support (53).

9. Dispositif selon la revendication 8, comportant des moyens des contrôle qui, d'une part, sont activement reliés aux moyens de transport continu (8, 10),

aux moyens de saisie (17), à la station de scellement (14), et aux moyens de découpage, ainsi que, de préférence, aux moyens de guidage, et, d'autre part, sont établis pour saisir le bord d'attaque (50) de la bande de film (5) et maintenir ceci à la hauteur d'alimentation (H) au-dessus de la surface de support (53) afin de diriger les moyens de transport (8, 10), et, de préférence, les moyens de guidage afin d'alimenter la bande de film (5) sous le bord d'attaque (50) de telle sorte qu'en aval du bord d'attaque (50), deux parties de bande de film (21, 22), jointes ensemble par un pli (20) et reposant l'une sur l'autre, sont formées, afin de comprimer les éléments de pression (14), avec les parties de bande de film (21, 22) entre eux, l'un contre l'autre afin de fournir un scellement en forme de U qui, avec le côté ouvert de la forme de U, est relié au pli (20) afin d'écarter les éléments de pression, après avoir été comprimés ensemble, et provoquer le détachement de l'emballage de la bande de film (5) par les moyens de découpage.

10. Dispositif selon la revendication 8 ou 9, dans lequel les moyens de transport continu (8, 10) comportent un premier transporteur continu (8) se déplaçant en amont des moyens de saisie (17) et un second transporteur continu (10) se déplaçant en aval des moyens de saisie (17).

11. Dispositif selon la revendication 10, dans lequel les moyens de contrôle sont organisés afin, après que l'emballage a été fermement scellé et libéré par découpage, d'entraîner le second transporteur (10) séparément du premier transporteur (8) afin d'emporter l'emballage dans une direction s'écartant des moyens de saisie (17).

12. Dispositif selon la revendication 10 ou 11, dans lequel le second transporteur (10) comporte trois sections de transporteur (16) mutuellement parallèles avec, reposant entre elles, les pieds de l'élément de maintien inférieur (14), et dans lequel la bande continue de l'élément de maintien inférieur se déplace en amont de ces trois sections (16).

13. Dispositif selon l'une des revendications 10 à 12, dans lequel le second transporteur (10) peut être déplacé vers le haut et vers le bas, à angles droits par rapport à la surface de transport de celui-ci, depuis une position située dans le prolongement du premier transporteur (8) vers une position située plus haut que le premier transporteur (8).

14. Dispositif selon l'une des revendications 10 à 13, dans lequel le premier (8) et / ou le second transporteur (10) comportent des transporteurs à bande ou à courroie ayant un matériau caoutchouteux de type caoutchouc sur la surface externe de la ou des

bandes et des courroies séparées d'une distance mutuelle.

15. Dispositif selon l'une des revendications 9 à 14, dans lequel la station de scellement (14) est une station de soudage par fusion, de préférence du type soudage par impulsions.

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Fig 1

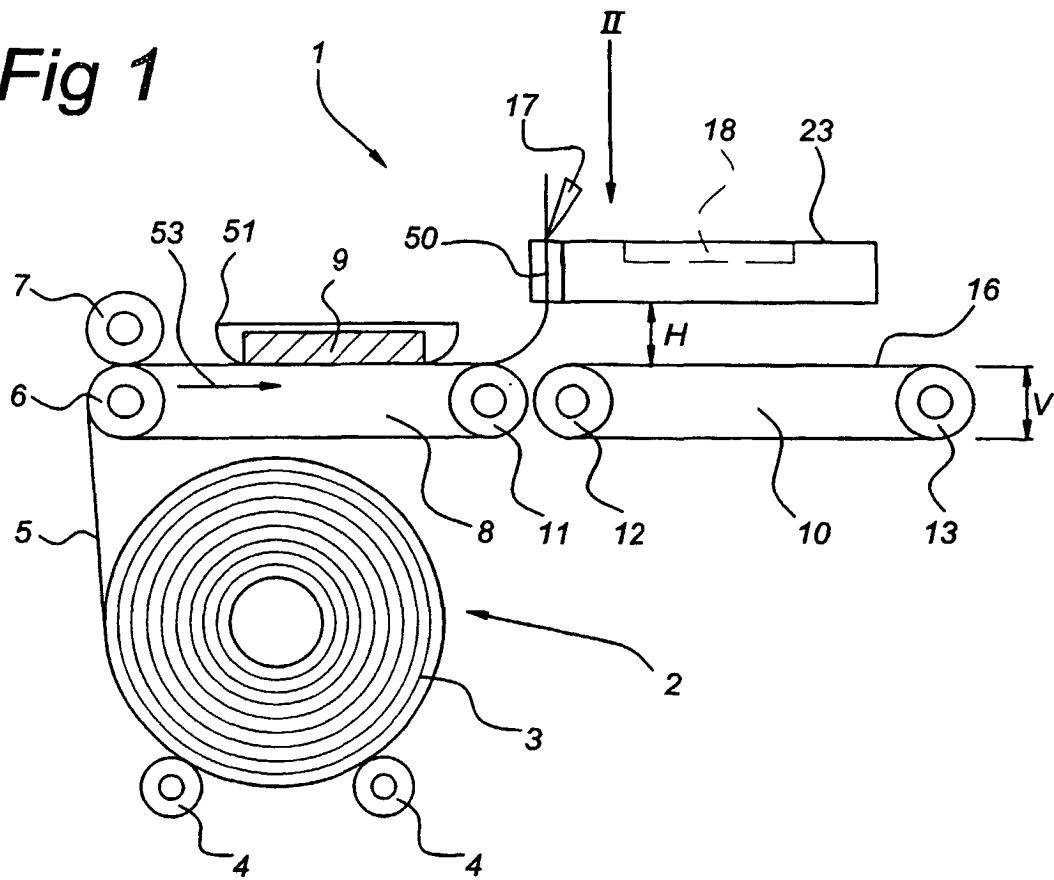


Fig 2

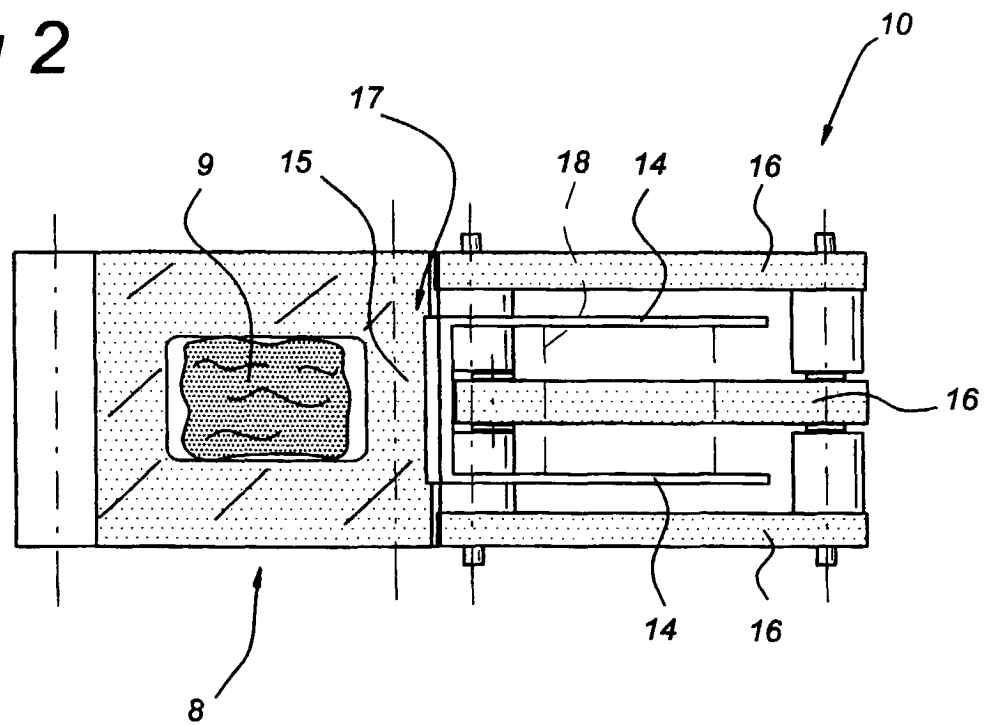


Fig 3

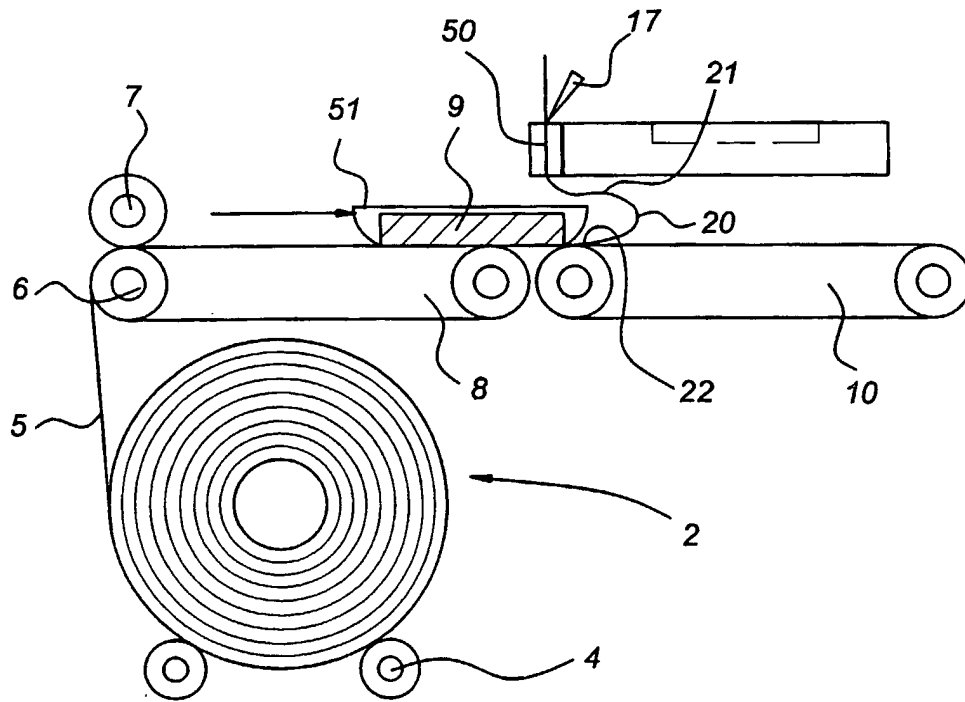


Fig 4

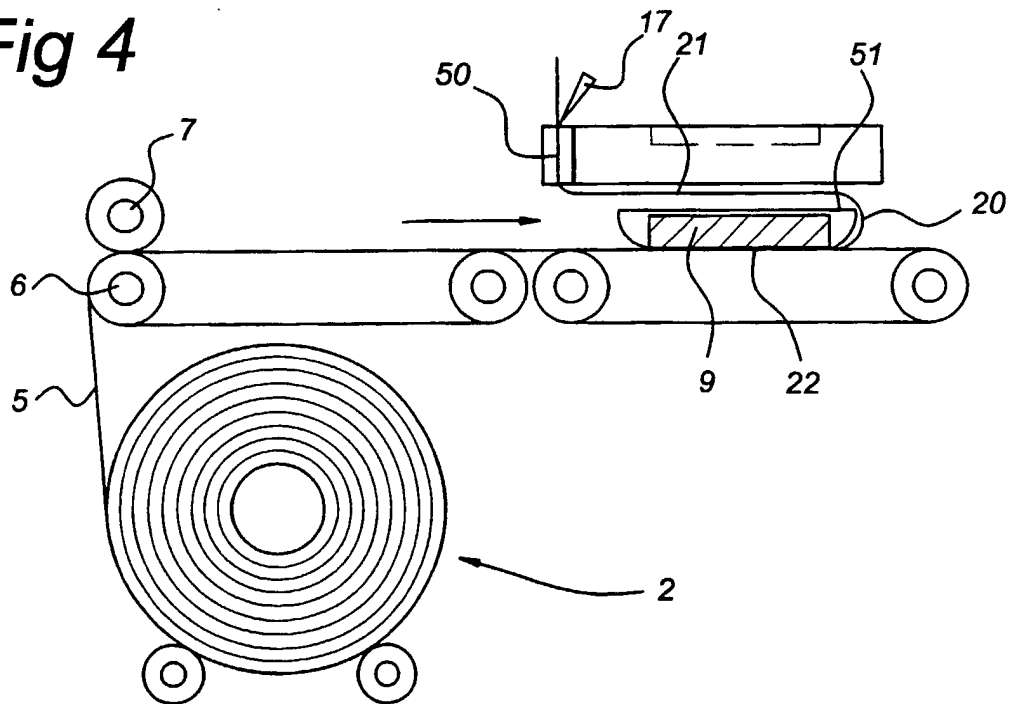


Fig 5

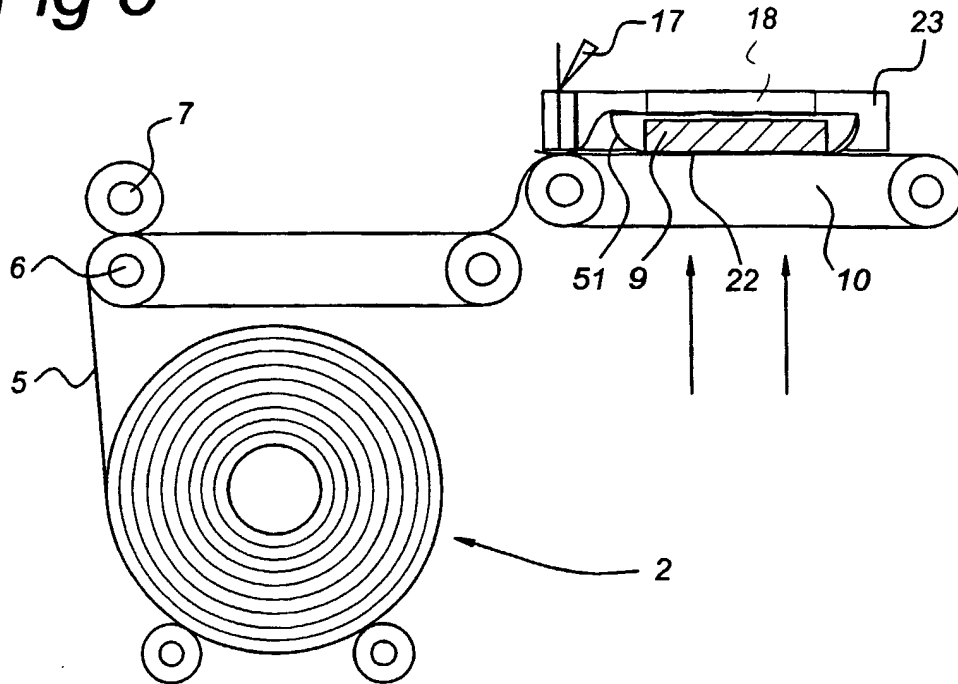


Fig 6

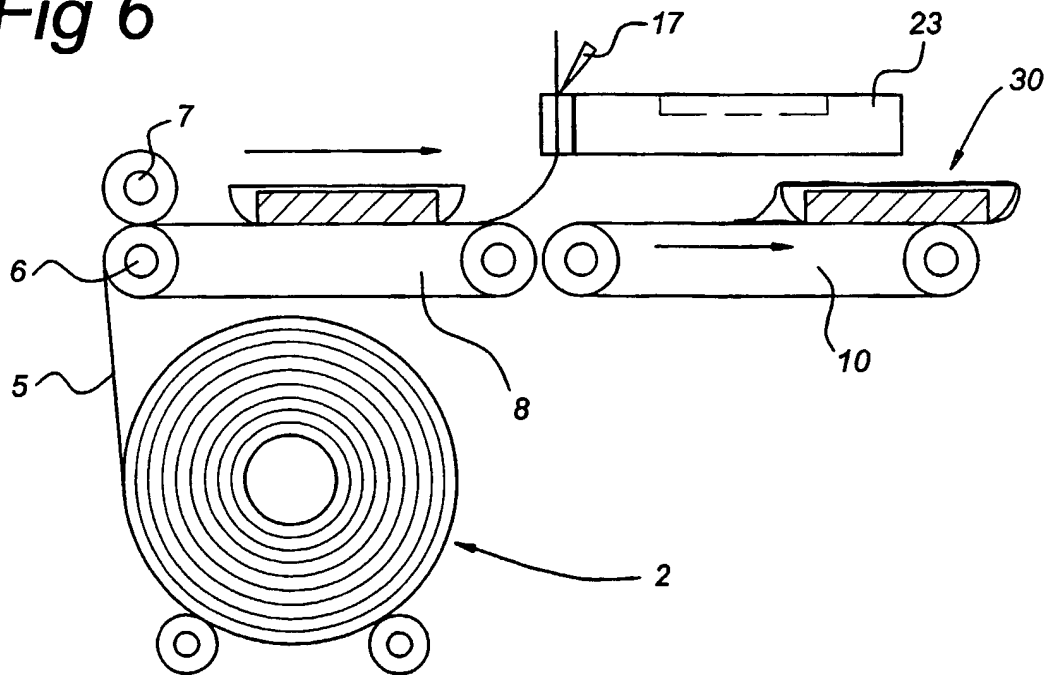


Fig 7

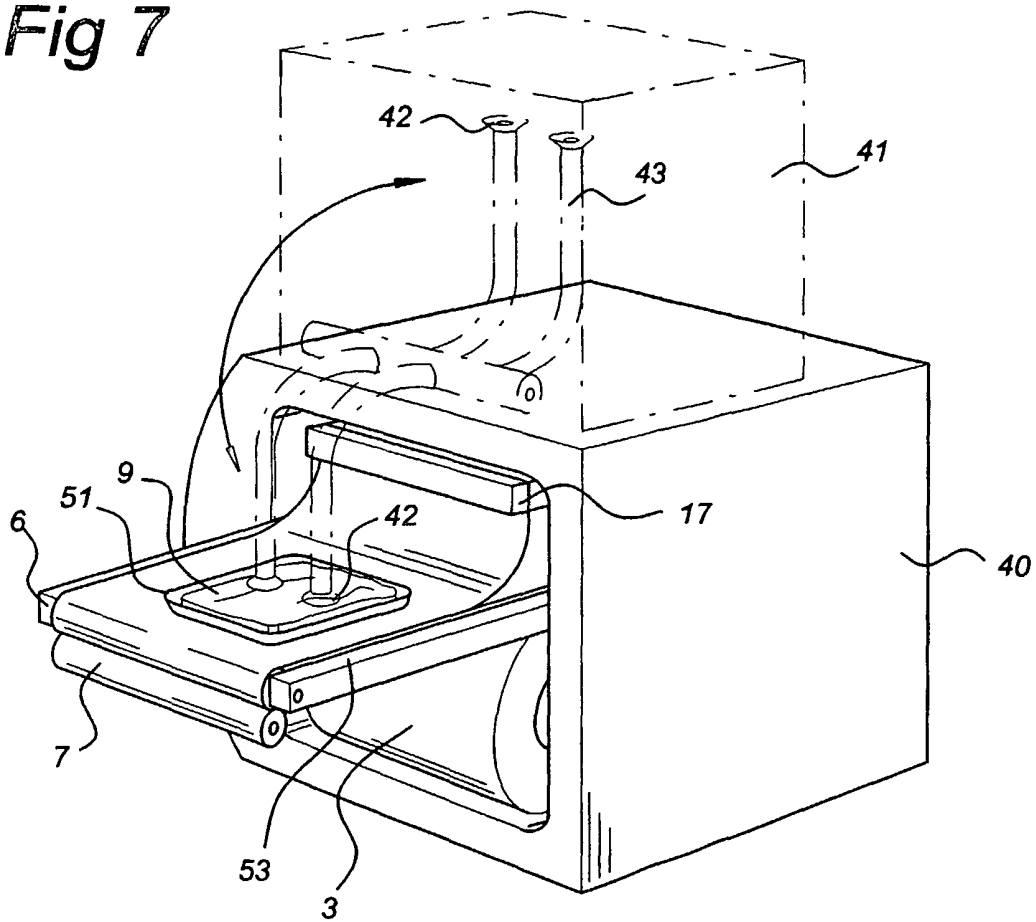


Fig 8

